

The State of the Civil Works Program



MG Don Riley
Director of Civil Works
21 September 2006





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Hurricane Katrina

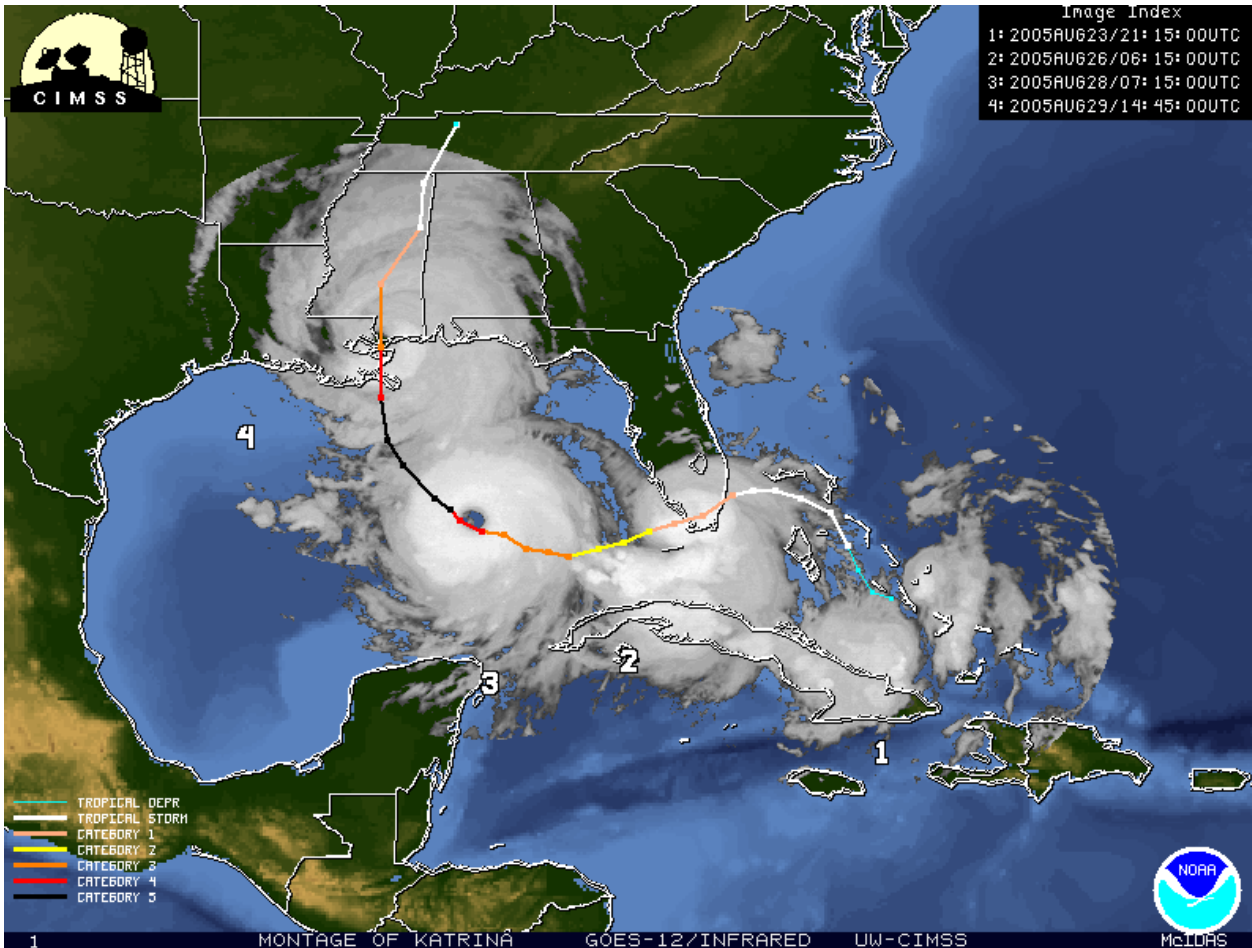
- **One of America's largest natural disasters**

- Category 5 strength less than 12 hours before landfall

- *127 MPH wind at Louisiana landfall*

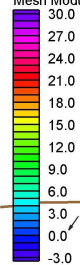
- Peak water level of 28 feet along Mississippi coast, 21 feet in Louisiana. (Highest storm surge ever measured on U.S. coast)

- Highest significant measured wave in Gulf of Mexico or Atlantic Ocean

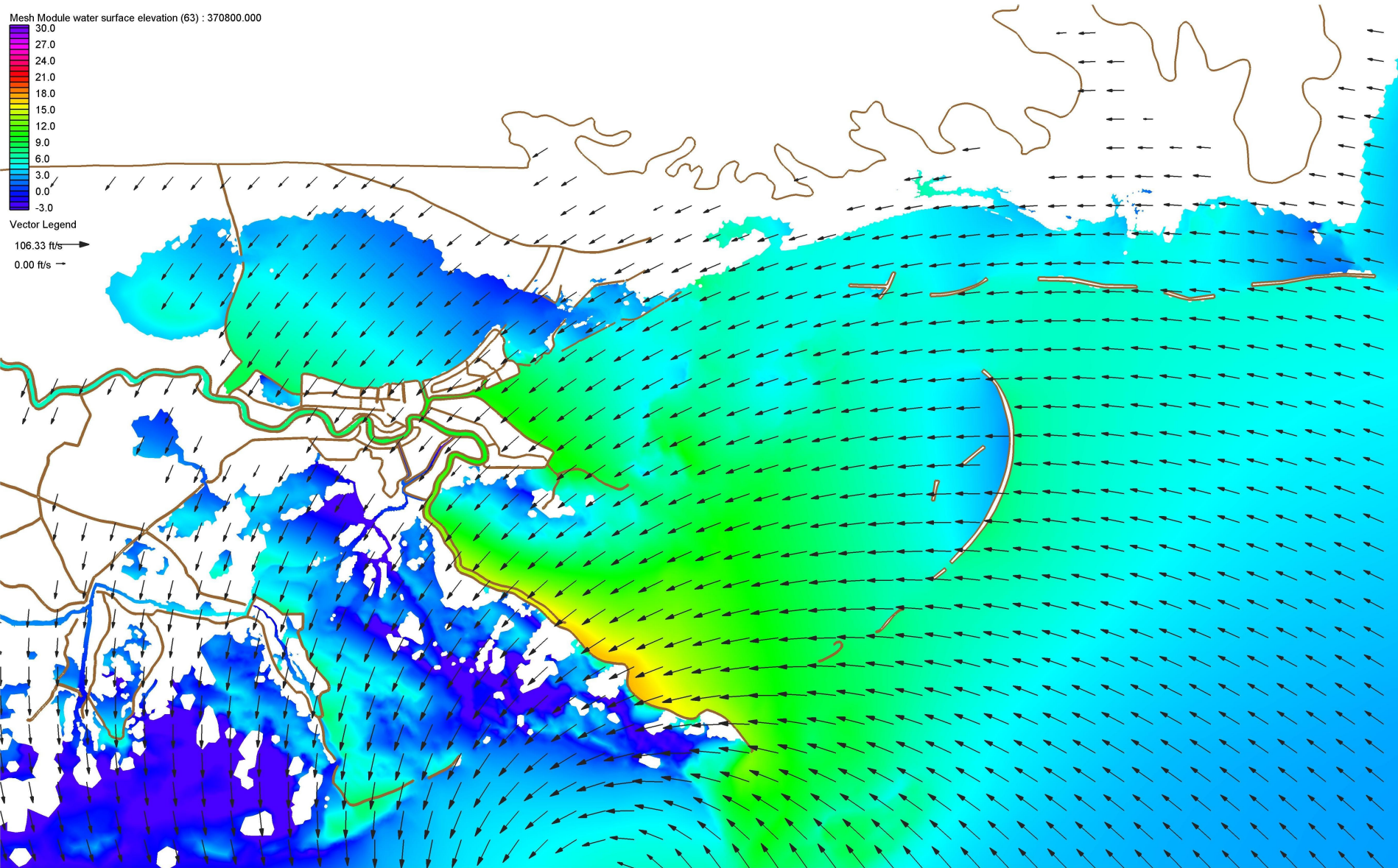
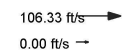


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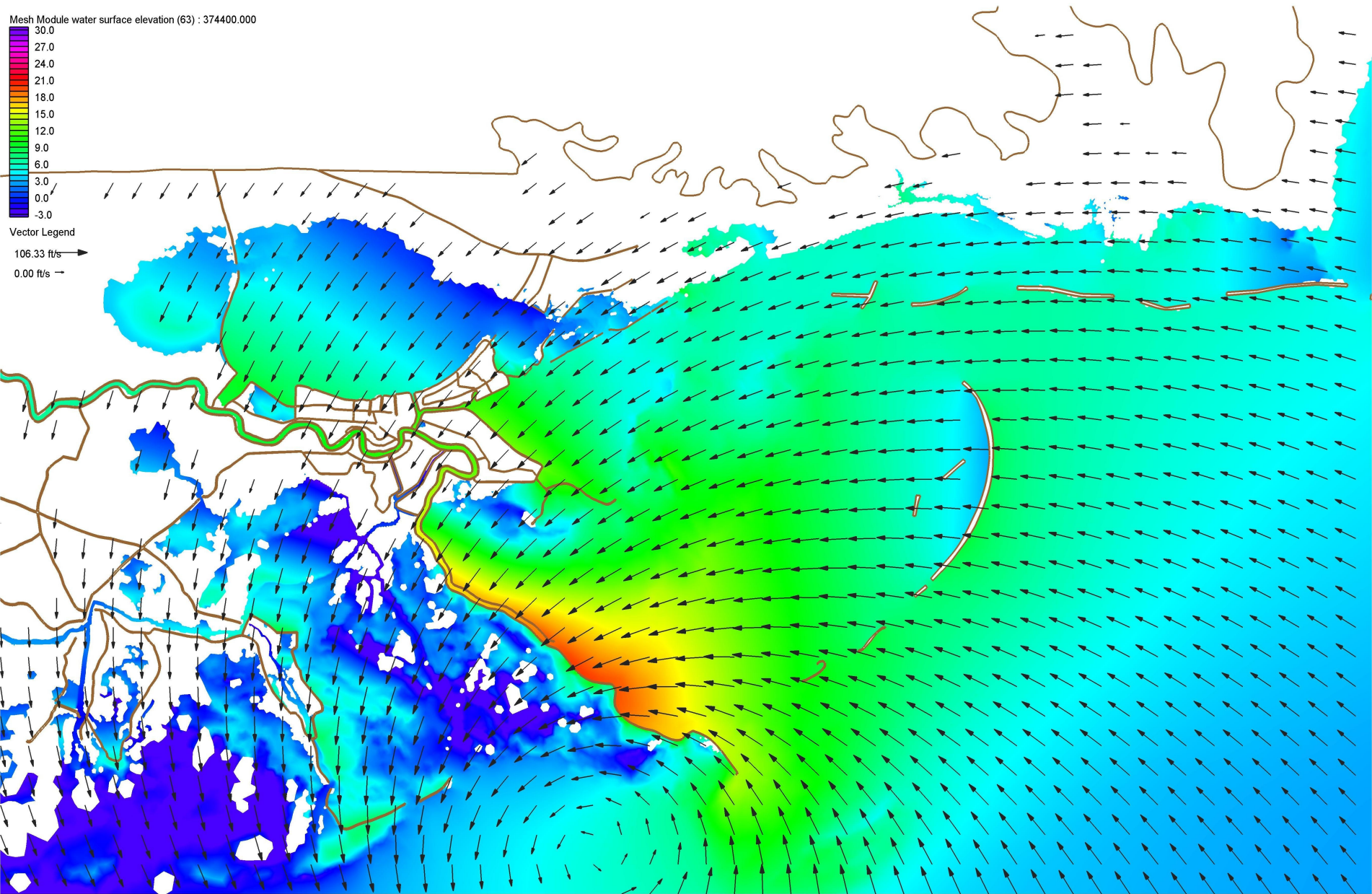
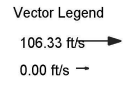
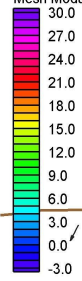
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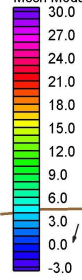
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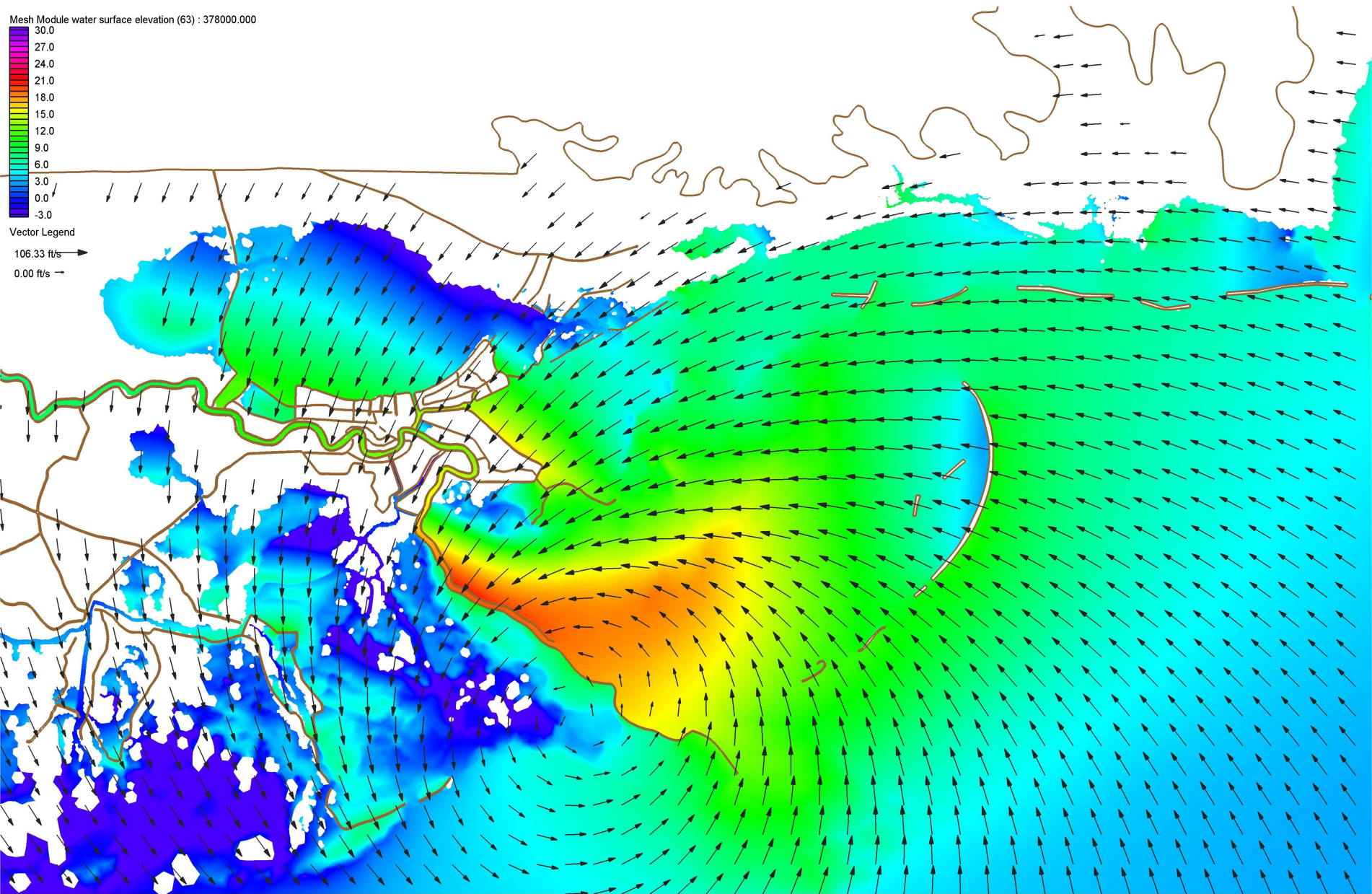
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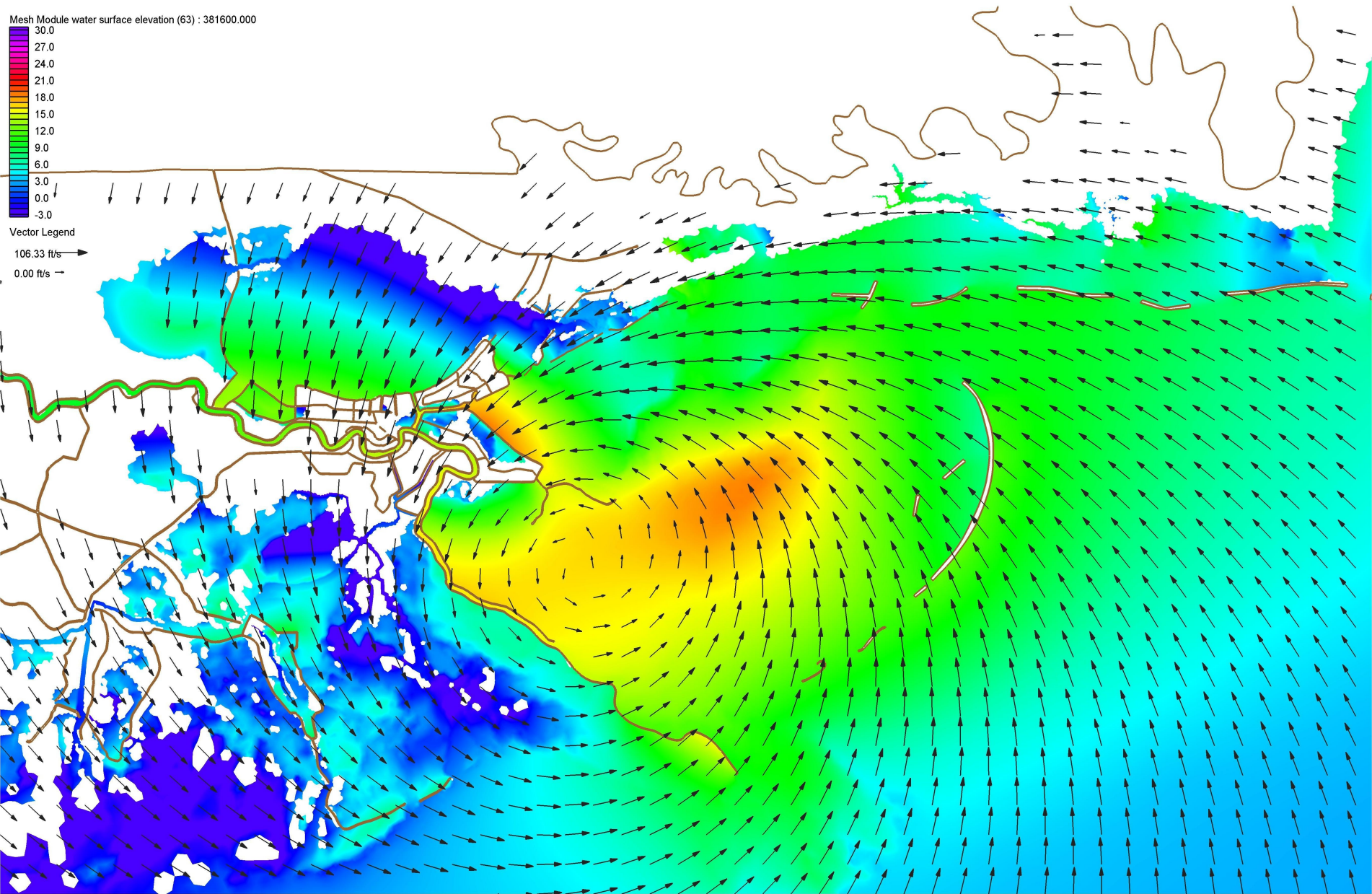
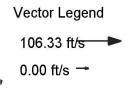
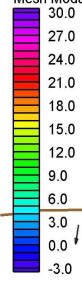
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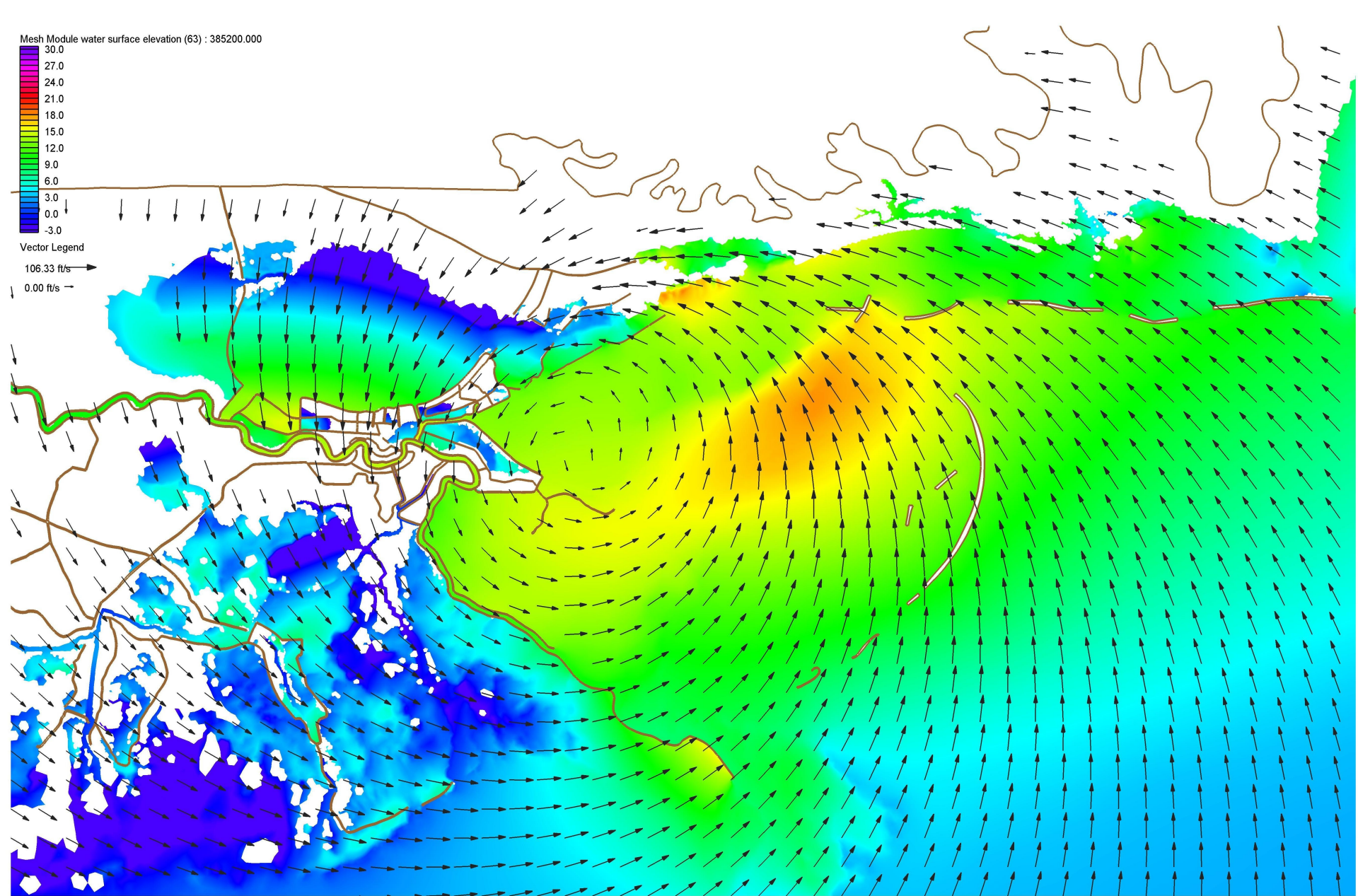
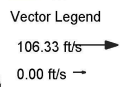
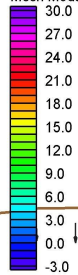
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106.33 ft/s →
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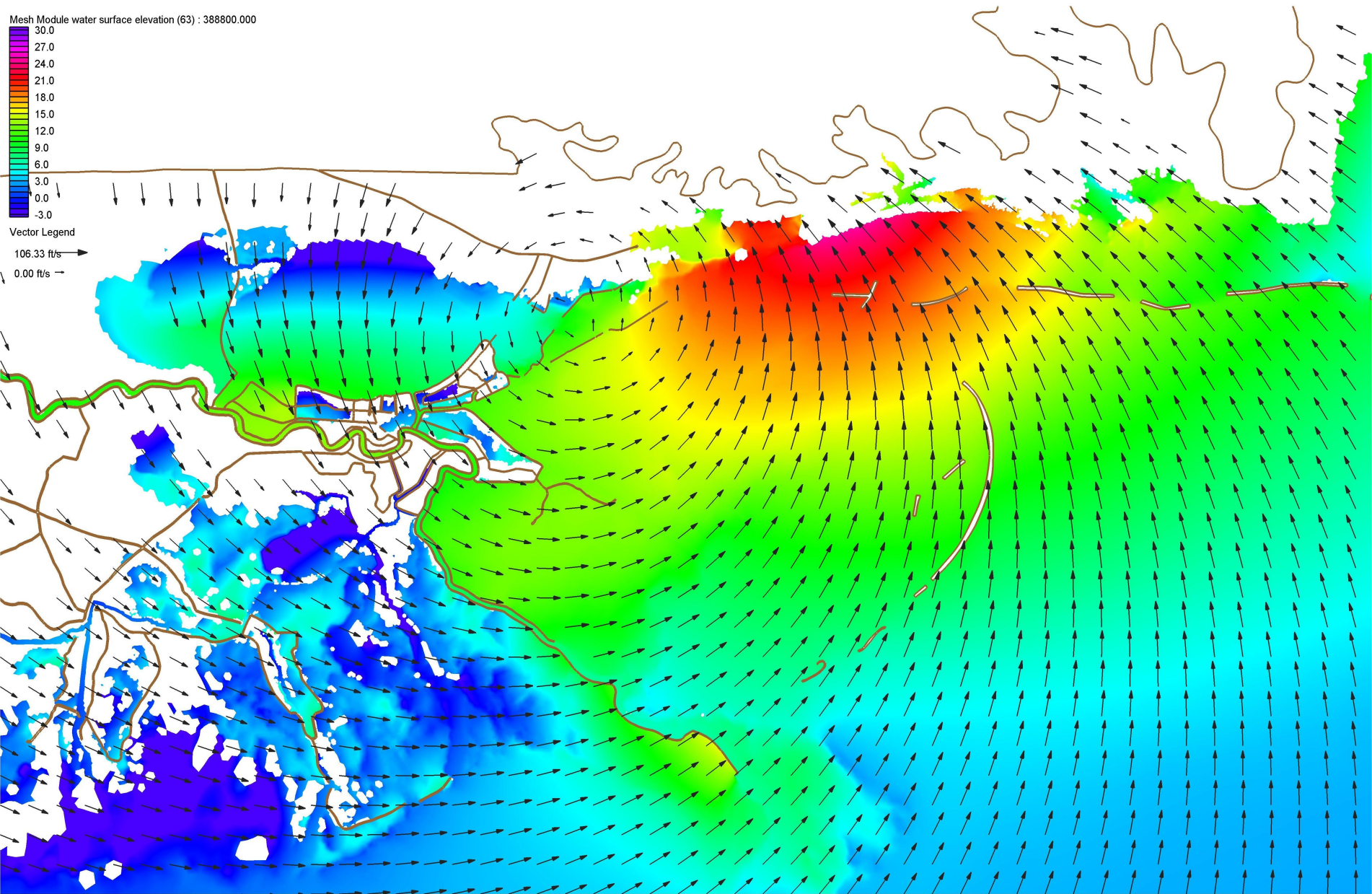
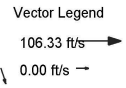
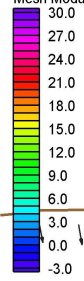
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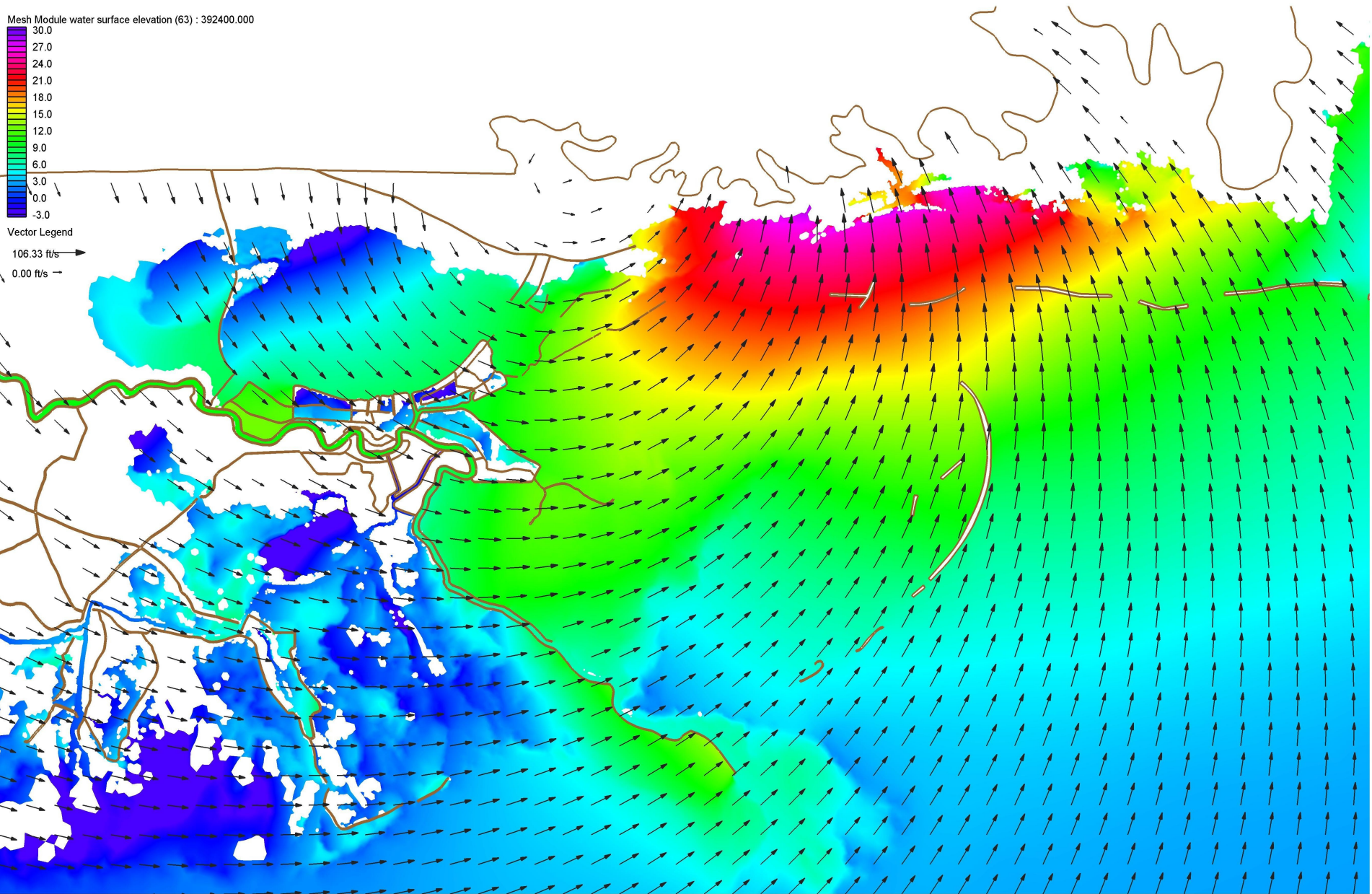
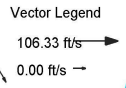
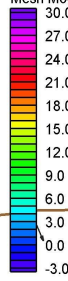
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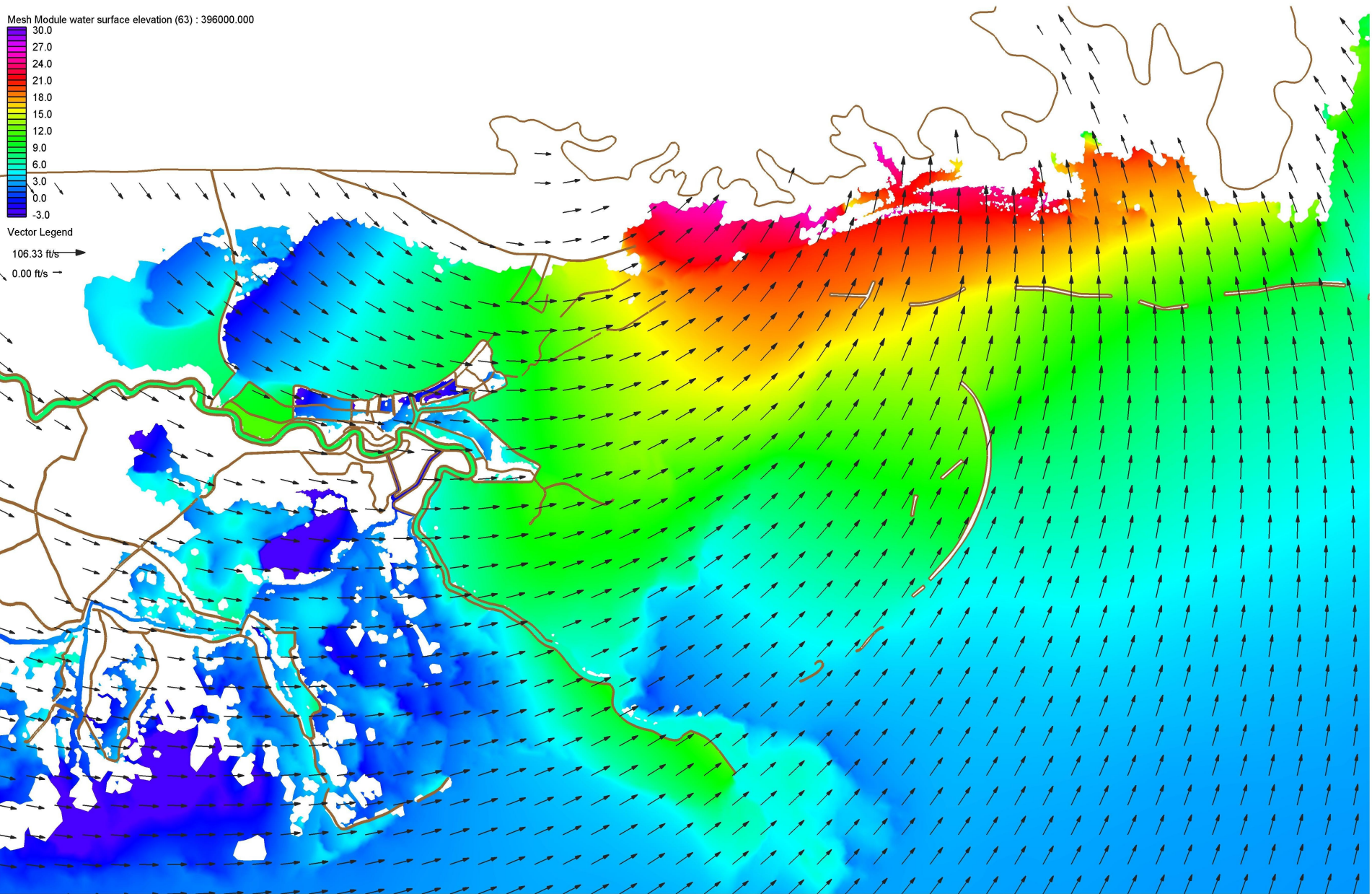
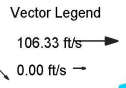
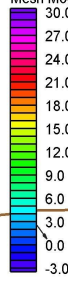
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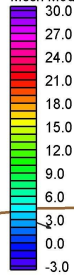
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Mesh Module water surface elevation (63) : 396000.000



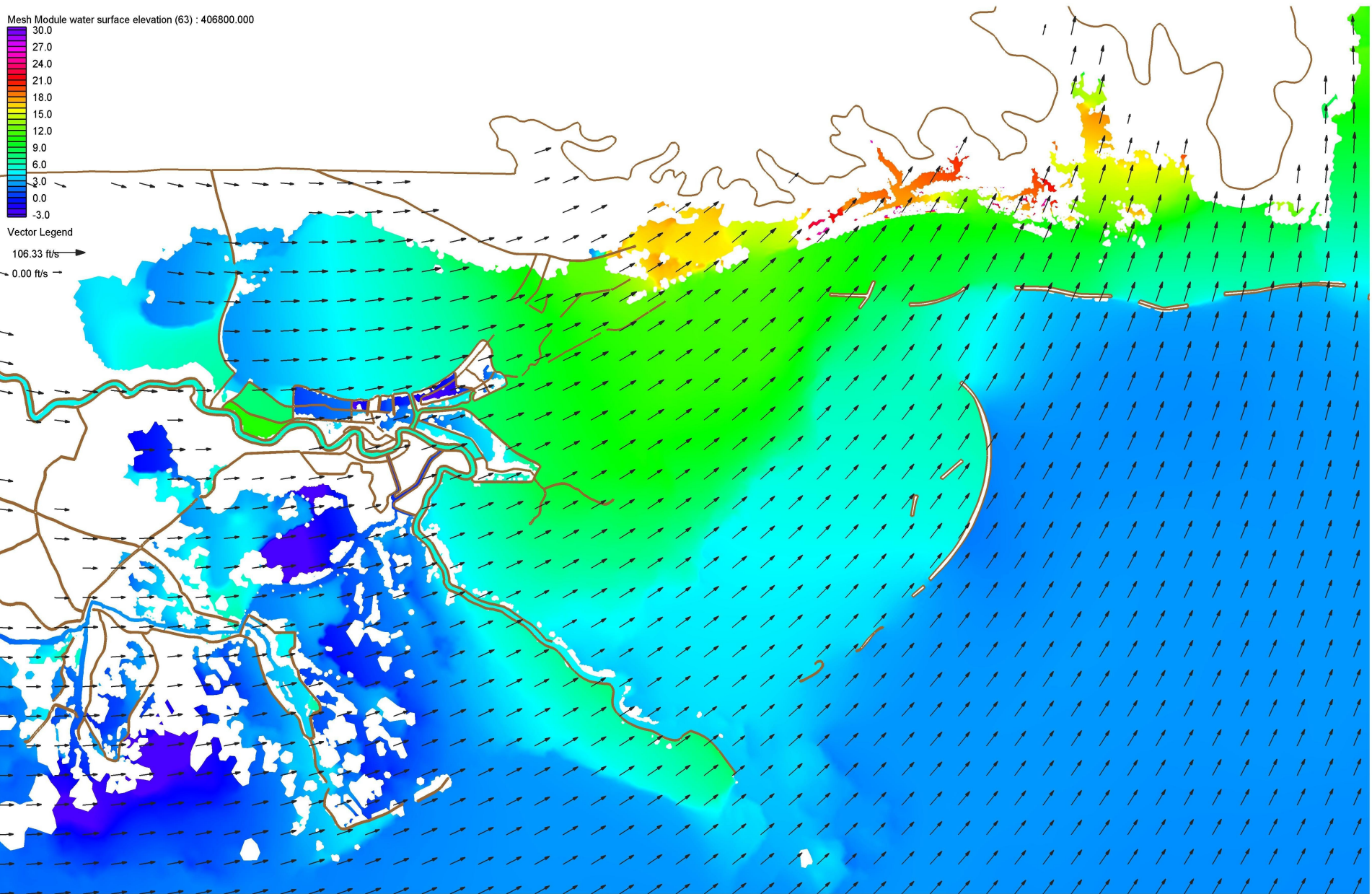
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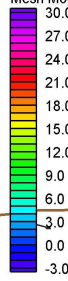
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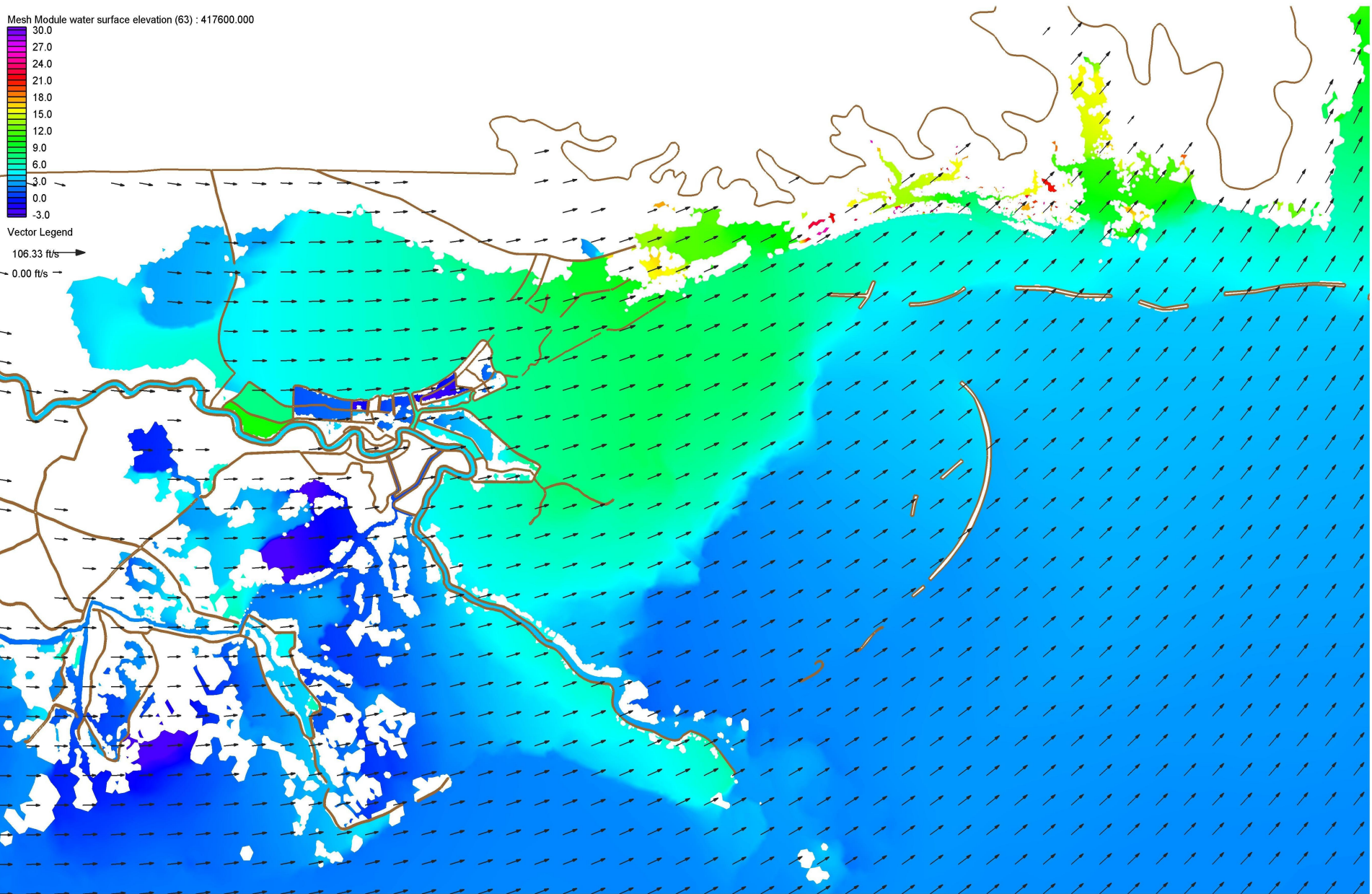
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Vector Legend

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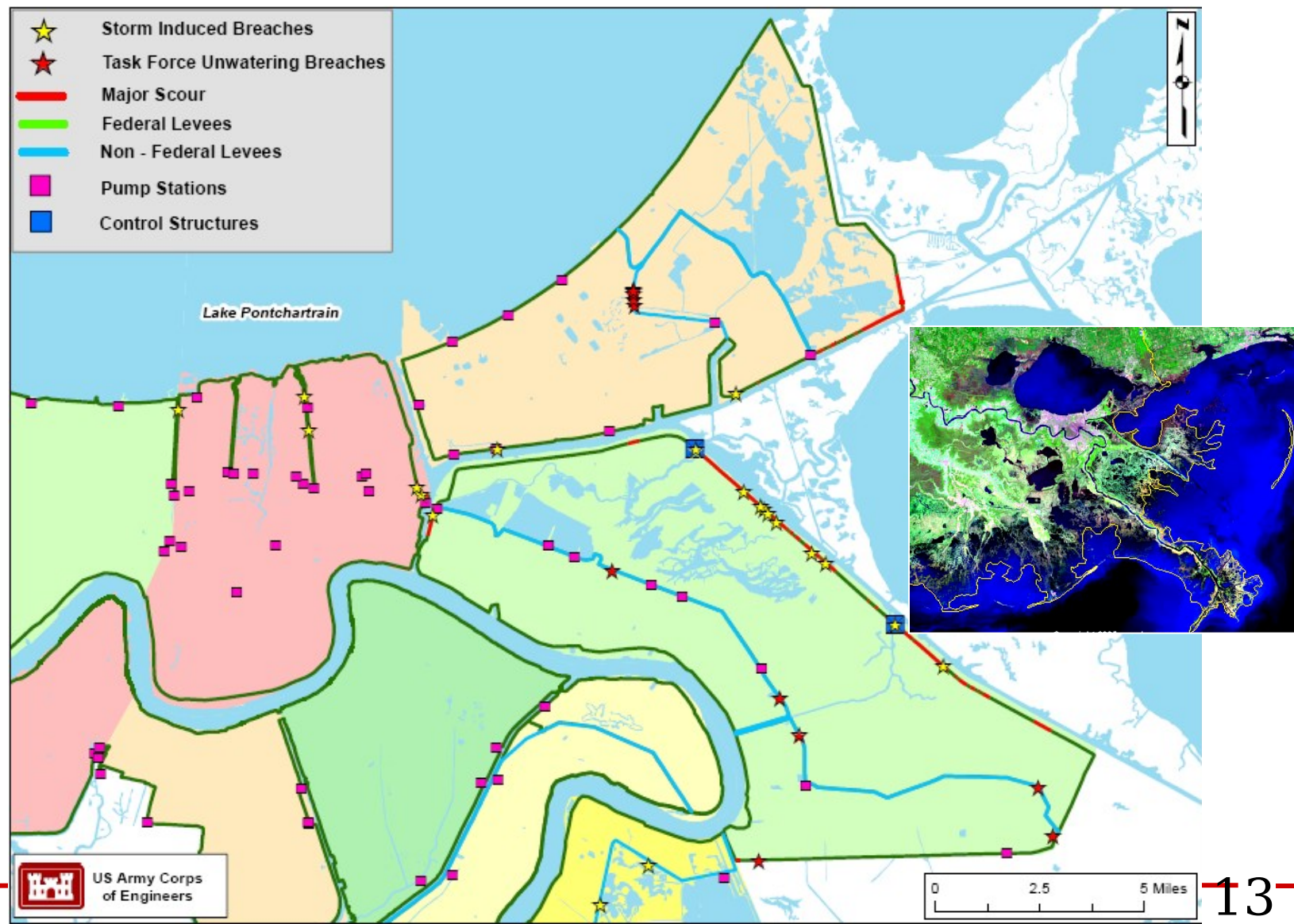
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Damage

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MVD's Task Force GUARDIAN

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- With few exceptions, USACE restored at least pre-Katrina level flood and storm protection
- Repaired and restored 220 miles of levees and floodwalls
- Replaced failed I-Walls with stronger floodwalls
- Installed interim gated closures and temporary pumps at canal outfalls



- Cost \$801 million
- ALL ACCOMPLISHED WITHIN 9 MONTHS and in time for start of 2006 hurricane season



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Southeast Louisiana Hurricane Protection - Current Work

- **Restore:**

- Restore undamaged levees/floodwalls to authorized heights.
- Correct floodwall deficiencies.

- **Complete:**

- Accelerate completion of unconstructed portions of projects.

- **Improve:**

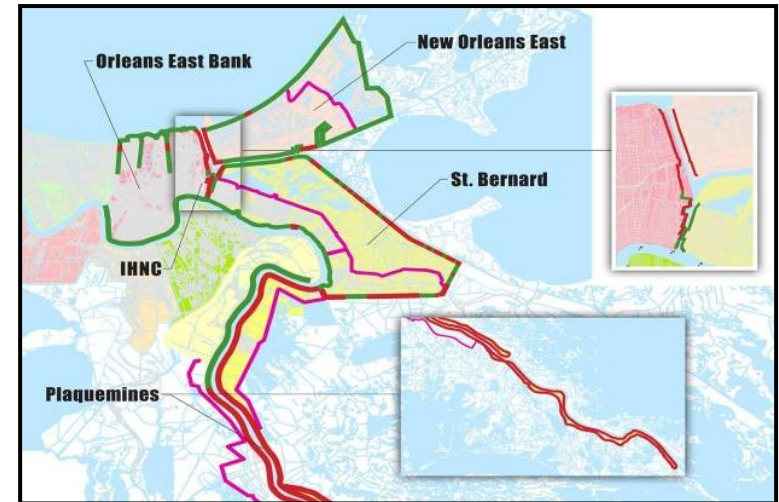
- Optimize performance of existing system.

- **Certify:**

- Raise system to provide 100 year level of protection.

- **Evaluate Higher Levels of Protection:**

- Louisiana Coastal Protection and Restoration Report

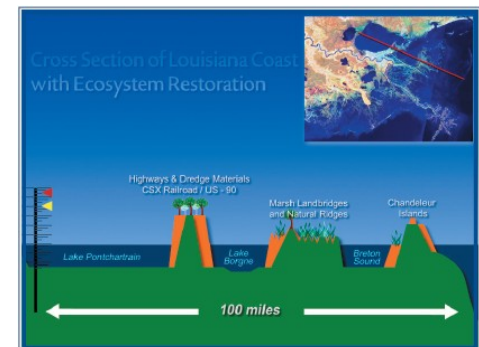
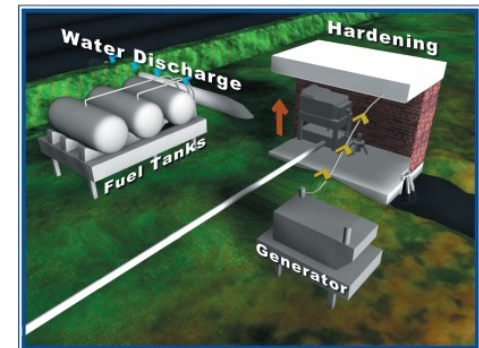
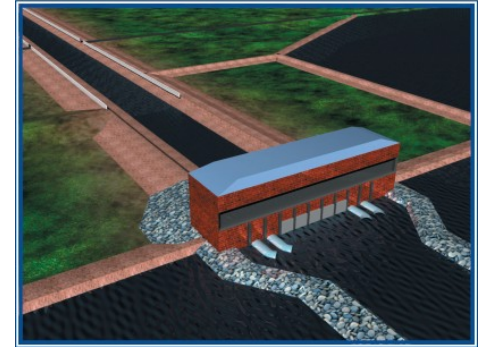




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S.E. Louisiana Hurricane Protection Proposed Improvements

- Permanent pumps and closures for New Orleans' three outfall canals
- Navigable closures to prevent hurricane surge from entering Industrial Canal area
- Storm-proofing existing interior drainage pump stations in Jefferson and Orleans Parishes
- Selective armoring for critical portions of New Orleans levee system
- Incorporation of Plaquemines Parish west bank non-federal levees into Federal levee system
- Restoration of critical areas of coastal wetlands and ecosystems





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Louisiana Coastal Protection and Restoration (LACPR)

- \$20 million authorized and funded by Energy & Water Development Appropriations Act, 2006.
- Category 5 equivalent comprehensive hurricane protection
- Congressional direction: develop and present full range of flood, coastal and hurricane protection measures exclusive of normal policy considerations.
 - Traditional National Economic Development (NED) and National Ecosystem Restoration (NER) analyses will not be done.
 - Risk-based tool development
 - Decision framework to present risks, costs & consequences



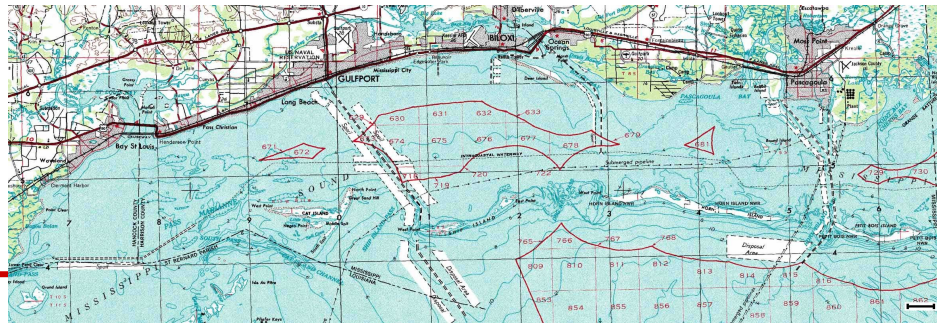
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Mississippi Coastal Improvements Program (Ms CIP)

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- \$10 million authorized in Emergency Supplemental Appropriations
- 6-Month Interim Report: (Jul 06)
 - Over 180 problem areas identified; 15 near-term improvements
 - 7 hurricane storm damage reduction projects
 - 4 flood damage reduction projects
 - 4 ecosystem restoration projects
 - Estimated cost - \$120 million
- 24-Months Comprehensive Plan
 - Due to Congress Dec 2007
 - Hurricane storm damage reduction involving multiple lines of protection:
 - Restoration barrier islands
 - Improving beaches and dunes
 - Balance of engineered and environmental measures





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Interagency Performance Evaluation Team (IPET)

Findings

Change:

- USACE needs better methods to consider change in hazards, systems or consequences.
- Authorizations and resource streams must recognize likelihood of changes.

Life Cycle

- Consider resilience and redundancy via adaptive designs to accommodate change.

Systems

- Develop risk-based, system-wide planning that incorporates non-economic consequences.
- Collaborate among stakeholders at all levels.

Policy and Practice

- Enhance technical competence; integrate rapidly emerging technologies and knowledge.
- Conduct continuous review of guidelines and projects.

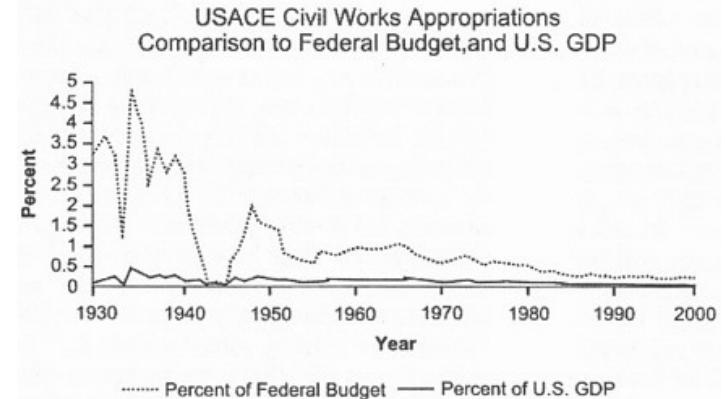
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Hurricane Protection Decision Chronology: Initial Findings

- **Federal Budget Process:** Constraints, competing priorities and uncertainty stretched completion dates for projects, influenced technical project decisions.
- **Unintended Impact of Cost Sharing:** Strained sponsors' ability to absorb project design changes due to new information on storm intensity and subsidence.
- **Incorporation of New Information & Technologies:** Formal procedures not in place for post-authorization consideration of new knowledge.
- **Level and Manner of Decision-Making:** Decisions made in “stovepipes” at field level under assumption that these were technical and not planning, policy or programming decisions.





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Hurricane Protection Decision Chronology: More Initial Findings

- **View of Project as an Integrated System:** Original project reflected unified vision, but incremental changes made without clear process to revisit vision, and without evaluation of how cumulative changes affected system risk & reliability.
- **Risk & Reliability:** Focused, system-wide consideration of reliability and residual risk not evidenced in project documentation.
- **Communication of Residual Risk:** Implications of design decisions not effectively communicated to stakeholders as project underwent significant design changes.

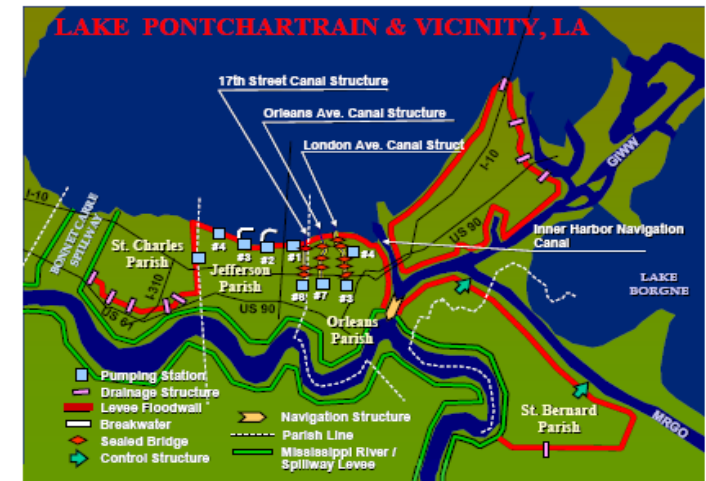


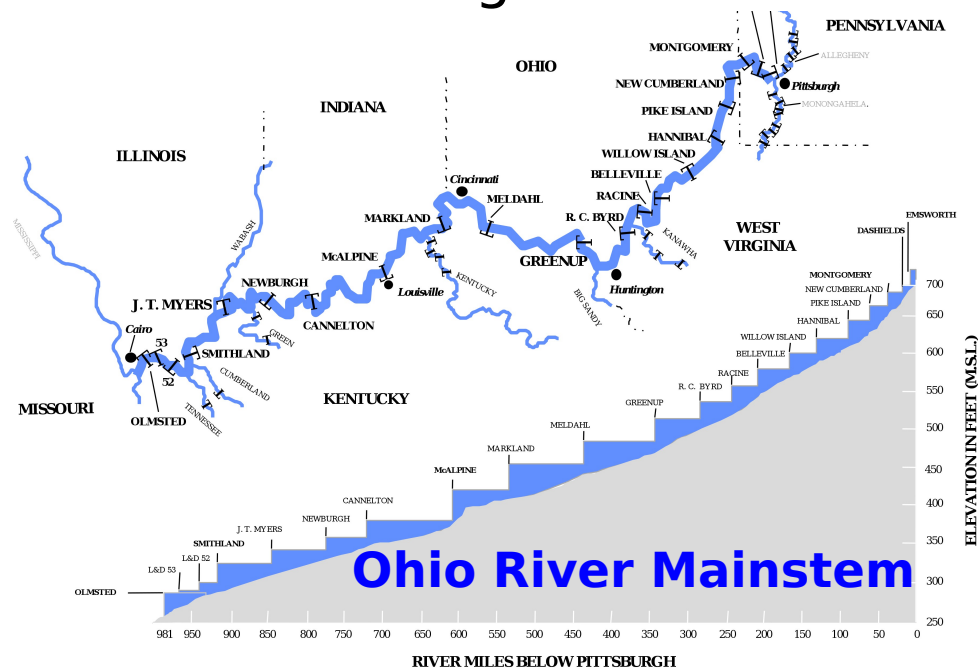
Figure 4. Map showing detailed geometry and features of the New Orleans metropolitan area



12 Actions for Change: Comprehensive Systems Approach

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1. Employ integrated, comprehensive and systems-based approach.
2. Employ risk-based concepts in planning, design, construction, operations & major maintenance.
3. Continuously reassess and update policy for program development, planning guidance and design and construction standards.
4. Employ dynamic independent review.
5. Employ adaptive planning and engineering systems.
6. Focus on sustainability.
7. Review and inspect completed works.
8. Assess and modify organizational behavior.



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12 Actions for Change: Communication

9. Effectively communicate risk.
10. Establish public involvement risk reduction strategies.





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12 Actions for Change: *Public Service Professionalism*

11. Manage and enhance technical expertise and professionalism.

12. Invest in research





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Flood Risk Management Initiative

Vision: Lead in collaborative, comprehensive and sustainable national flood risk management to improve public safety and reduce flood damages to our country.

Purpose: Integrate and synchronize ongoing, diverse flood risk management projects, programs and authorities of USACE with counterpart projects, programs and authorities of FEMA, other Federal agencies, State organizations and regional and local



National Flood Risk Management Initiative



FEMA



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Levee Inventory and Assessments

Inventory:

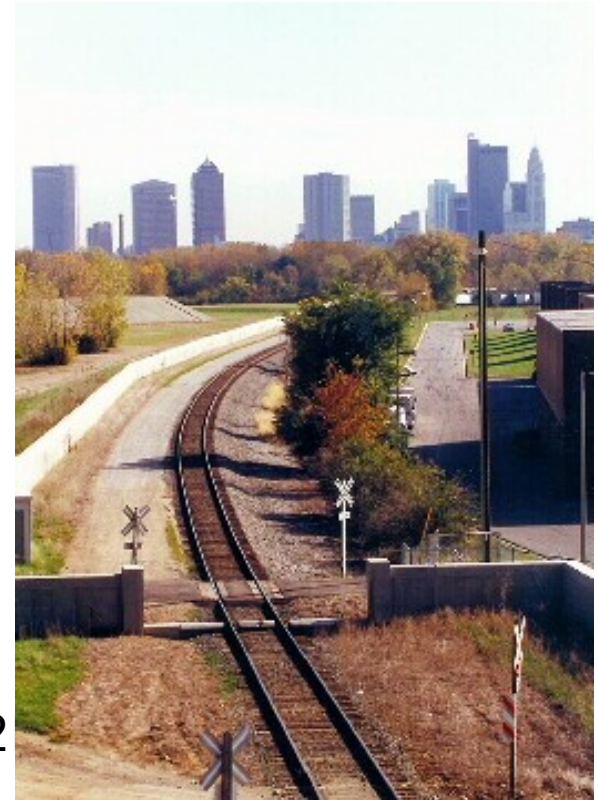
- GIS-based
- Defines Unknown
- Builds National Portfolio

Assessments:

- ~90% of overall effort
- Facilitates effective investments and risk reduction
- Supports certifications

Cost & Milestones:

- Levee Database GIS Model, Nov 06, \$1.5M
- Risk Methodology Development, Mar 07, \$2
- Beta Test Risk Methodology, Mar 07, \$0.5M
- Federal levees input into Database, Jul 07, \$26M





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Emergency Management Initiatives

- 8,000+ Corps employees participated in Katrina response
- Remedial Action Plan
 - 18 new or revised SOPs and Mission Guides
 - Review of Advance Contracting Initiative contracts
 - Lean Six Sigma Analysis of Deployment Procedures
- Levee Guidance
 - Levee Owner's Manual
 - Inspection Program Guidance





Asset Management

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Civil Works Inventory:

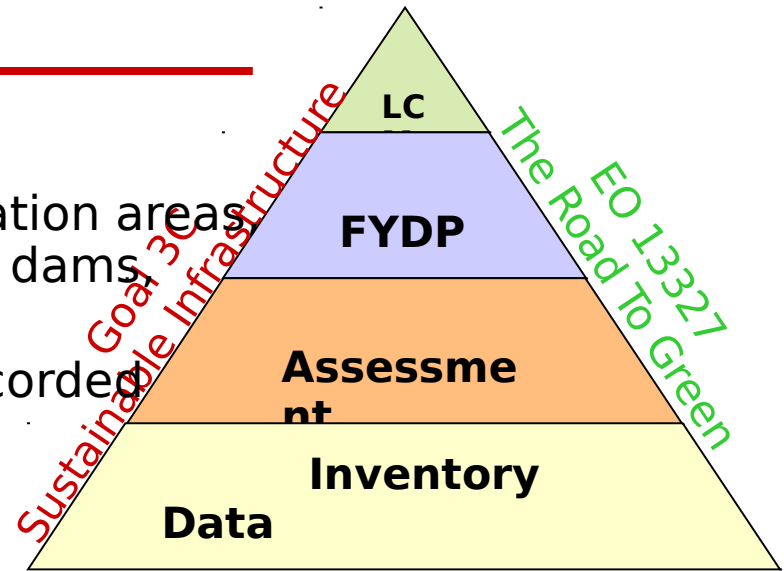
- ~ 1,000 coastal structures, 2,500 recreation areas, 75 hydropower facilities, 257 locks, 606 dams, seven laboratories.
- ~ 11.8 million acres of land holdings recorded as 280,000 tracts of land
- Total value > \$200B

Goals:

- The Right Business Practice: Life Cycle Management (LCM)- Goal 3c
- The Right Size Inventory: Mission critical asset focus-Executive Order 13327
- The Right Performance: Common standards of reliability- BPI-PART
- The Right Investments: Informed risk-based budget decisions

Status:

- Identifying condition assessment and risk methodology gaps
- Improving quality of asset inventory
- Implementing standardized maintenance management tool
- Developing integrated framework for Corps missions and assets





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FY07 Federal Agency Discretionary Budgets (\$Millions)

Agency	FY07 Budget	% Change from FY06	Agency	FY07 Budget	% Change from FY06
Legislative Branch	4,285	+12.0%	Treasury	11,600	+0.5%
Judiciary	5,873	+9.5%	Veterans Affairs	35,697	+6.0%
Agriculture	19,717	-10.0%	Corps of Engineers-Civil	4,733	+4.9%
Commerce	6,139	-4.5%	Other Defense- Civil	147	-35.8%
Defense-Military	489,302	-8.8%	EPA	7,315	-4.1%
Education	54,411	-6.4%	Exec. Ofc. President	331	-0.9%
Energy	23,558	0.0%	GSA	450	-27.8%
Health/Human Services	69,920	-3.7%	International Assistance	18,363	+10.3%
Homeland Security	30,932	+309.8%	NASA	16,792	+1.0%
HUD	33,647	-27.1%	Nat. Science Foundation	6,020	+7.9%

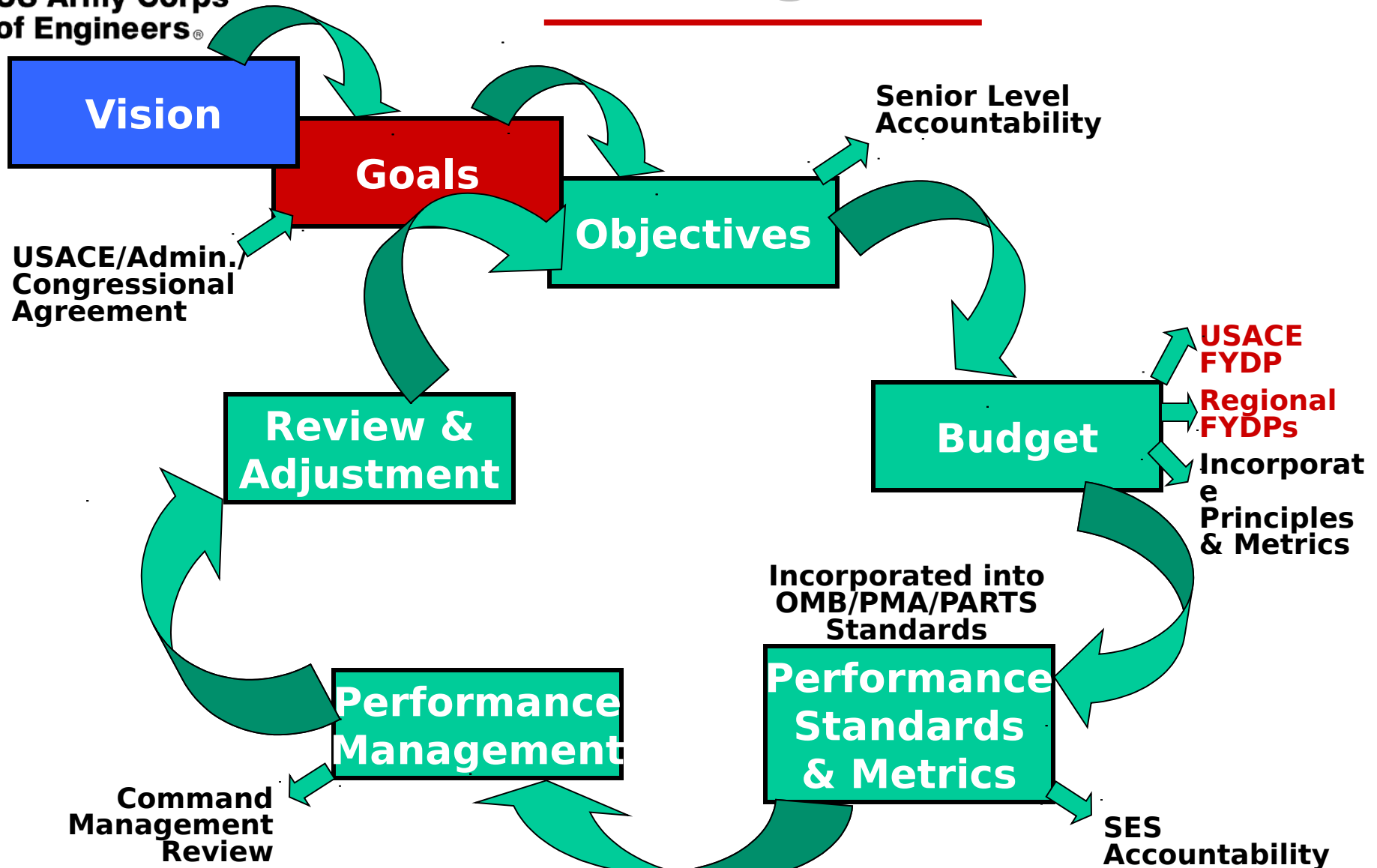


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Long Term Budgeting Goals

- Portfolio investment strategy that provides best value for the Nation
- One unifying concept of Program Development, Defense and Execution
- CW Vision, Goals and Objectives drive budget development
- Better compliance with President's Management Agenda process
- Better long term planning and programmatic decision-making within Administration (not project-by-project)
- Shared water resources development vision with Administration, Congress, stakeholders and partners





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WRDA '06



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- House (Jul 05) and Senate (Jun 06) have passed versions of WRDA
- Both bills contain provisions on Independent Peer Review/Planning Improvements
- Administration has not determined position on any policy provisions in either bill, but agrees that Independent Peer Review must:
 - Begin early in the project cycle
 - Occur concurrently with design
 - Be properly scoped and defined; not arbitrary
 - Have determination that review is reasonable and necessary
 - Be efficient, effective and timely
 - Be based on consistent and predictable procedures
- Bottom Line – USACE supports Independent Peer Review when outcome is a better overall project and process

Essayons!

